

PCT

RAW SEQUENCE LISTING

DATE: 10/05/2001

PATENT APPLICATION: US/09/890,229

TIME: 11:05:12

Input Set : A:\PTO_mh.txt

Output Set: N:\CRF3\10052001\I890229.raw

5 <110> APPLICANT: Bramley, Peter Michael
 6 Harker, Mark
 8 <120> TITLE OF INVENTION: Manipulating Isoprenoid Expression
 10 <130> FILE REFERENCE: B0192/7031
 C--> 12 <140> CURRENT APPLICATION NUMBER: US/09/890,229
 C--> 13 <141> CURRENT FILING DATE: 2001-07-27
 15 <150> PRIOR APPLICATION NUMBER: GB 9901902.8
 16 <151> PRIOR FILING DATE: 1999-01-28
 18 <160> NUMBER OF SEQ ID NOS: 12
 20 <170> SOFTWARE: PatentIn version 3.0
 22 <210> SEQ ID NO: 1
 23 <211> LENGTH: 640
 24 <212> TYPE: PRT
 25 <213> ORGANISM: Synechocystis sp.
 27 <400> SEQUENCE: 1

29	Met	His	Ile	Ser	Glu	Leu	Thr	His	Pro	Asn	Glu	Leu	Lys	Gly	Leu	Ser
30	1				5					10					15	
32	Ile	Arg	Glu	Leu	Glu	Glu	Val	Ser	Arg	Gln	Ile	Arg	Glu	Lys	His	Leu
33			20					25					30			
35	Gln	Thr	Val	Ala	Thr	Ser	Gly	Gly	His	Leu	Gly	Pro	Gly	Leu	Gly	Val
36			35				40					45				
38	Val	Glu	Leu	Thr	Val	Ala	Leu	Tyr	Ser	Thr	Leu	Asp	Leu	Asp	Lys	Asp
39		50				55				60						
41	Arg	Val	Ile	Trp	Asp	Val	Gly	His	Gln	Ala	Tyr	Pro	His	Lys	Met	Leu
42	65				70					75					80	
44	Thr	Gly	Arg	Tyr	His	Asp	Phe	His	Thr	Leu	Arg	Gln	Lys	Asp	Gly	Val
45				85					90					95		
47	Ala	Gly	Tyr	Leu	Lys	Arg	Ser	Glu	Ser	Arg	Phe	Asp	His	Phe	Gly	Ala
48				100				105					110			
50	Gly	His	Ala	Ser	Thr	Ser	Ile	Ser	Ala	Gly	Leu	Gly	Met	Ala	Leu	Ala
51			115				120					125				
53	Arg	Asp	Ala	Lys	Gly	Glu	Asp	Phe	Lys	Val	Val	Ser	Ile	Ile	Gly	Asp
54		130				135						140				
56	Gly	Ala	Leu	Thr	Gly	Gly	Met	Ala	Leu	Glu	Ala	Ile	Asn	His	Ala	Gly
57	145					150				155					160	
59	His	Leu	Pro	His	Thr	Arg	Leu	Met	Val	Ile	Leu	Asn	Asp	Asn	Glu	Met
60				165					170						175	
62	Ser	Ile	Ser	Pro	Asn	Val	Gly	Ala	Ile	Ser	Arg	Tyr	Leu	Asn	Lys	Val
63				180				185					190			
65	Arg	Leu	Ser	Ser	Pro	Met	Gln	Phe	Leu	Thr	Asp	Asn	Leu	Glu	Glu	Gln
66			195				200					205				
68	Ile	Lys	His	Leu	Pro	Phe	Val	Gly	Asp	Ser	Leu	Thr	Pro	Glu	Met	Glu
69		210				215						220				
71	Arg	Val	Lys	Glu	Gly	Met	Lys	Arg	Leu	Val	Val	Pro	Lys	Val	Gly	Ala
72	225					230					235				240	
74	Val	Ile	Glu	Glu	Leu	Gly	Phe	Lys	Tyr	Phe	Gly	Pro	Ile	Asp	Gly	His
75				245					250						255	

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Entered

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77 Ser Leu Gln Glu Leu Ile Asp Thr Phe Lys Gln Ala Glu Lys Val Pro
78          260          265          270
80 Gly Pro Val Phe Val His Val Ser Thr Thr Lys Gly Lys Gly Tyr Asp
81          275          280          285
83 Leu Ala Glu Lys Asp Gln Val Gly Tyr His Ala Gln Ser Pro Phe Asn
84          290          295          300
86 Leu Ser Thr Gly Lys Ala Tyr Pro Ser Ser Lys Pro Lys Pro Pro Ser
87 305          310          315          320
89 Tyr Ser Lys Val Phe Ala His Thr Leu Thr Thr Leu Ala Lys Glu Asn
90          325          330          335
92 Pro Asn Ile Val Gly Ile Thr Ala Ala Met Ala Thr Gly Thr Gly Leu
93          340          345          350
95 Asp Lys Leu Gln Ala Lys Leu Pro Lys Gln Tyr Val Asp Val Gly Ile
96          355          360          365
98 Ala Glu Gln His Ala Val Thr Leu Ala Ala Gly Met Ala Cys Glu Gly
99          370          375          380
101 Ile Arg Pro Val Val Ala Ile Tyr Ser Thr Phe Leu Gln Arg Gly Tyr
102 385          390          395          400
104 Asp Gln Ile Ile His Asp Val Cys Ile Gln Lys Leu Pro Val Phe Phe
105          405          410          415
107 Cys Leu Asp Arg Ala Gly Ile Val Gly Ala Asp Gly Pro Thr His Gln
108          420          425          430
110 Gly Met Tyr Asp Ile Ala Tyr Leu Arg Cys Ile Pro Asn Leu Val Leu
111          435          440          445
113 Met Ala Pro Lys Asp Glu Ala Glu Leu Gln Gln Met Leu Val Thr Gly
114          450          455          460
116 Val Asn Tyr Thr Gly Gly Ala Ile Ala Met Arg Tyr Pro Arg Gly Asn
117 465          470          475          480
119 Gly Ile Gly Val Pro Leu Met Glu Glu Gly Trp Glu Pro Leu Glu Ile
120          485          490          495
122 Gly Lys Ala Glu Ile Leu Arg Ser Gly Asp Asp Val Leu Leu Gly
123          500          505          510
125 Tyr Gly Ser Met Val Tyr Pro Ala Leu Gln Thr Ala Glu Leu Leu His
126          515          520          525
128 Glu His Gly Ile Glu Ala Thr Val Val Asn Ala Arg Phe Val Lys Pro
129          530          535          540
131 Leu Asp Thr Glu Leu Ile Leu Pro Leu Ala Glu Arg Ile Gly Lys Val
132 545          550          555          560
134 Val Thr Met Glu Glu Gly Cys Leu Met Gly Gly Phe Gly Ser Ala Val
135          565          570          575
137 Ala Glu Ala Leu Met Asp Asn Asn Val Leu Val Pro Leu Lys Arg Leu
138          580          585          590
140 Gly Val Pro Asp Ile Leu Val Asp His Ala Thr Pro Glu Gln Ser Thr
141          595          600          605
143 Val Asp Leu Gly Leu Thr Pro Ala Gln Met Ala Gln Asn Ile Met Ala
144          610          615          620
146 Ser Leu Phe Lys Thr Glu Thr Glu Ser Val Val Ala Pro Gly Val Ser
147 625          630          635          640
150 <210> SEQ ID NO: 2

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151 <211> LENGTH: 633
152 <212> TYPE: PRT
153 <213> ORGANISM: Bacillus subtilis
155 <400> SEQUENCE: 2
157 Met Asp Leu Leu Ser Ile Gln Asp Pro Ser Phe Leu Lys Asn Met Ser
158 1 5 10 15
160 Ile Asp Glu Leu Glu Lys Leu Ser Asp Glu Ile Arg Gln Phe Leu Ile
161 20 25 30
163 Thr Ser Leu Ser Ala Ser Gly Gly His Ile Gly Pro Asn Leu Gly Val
164 35 40 45
166 Val Glu Leu Thr Val Ala Leu His Lys Glu Phe Asn Ser Pro Lys Asp
167 50 55 60
169 Lys Phe Leu Trp Asp Val Gly His Gln Ser Tyr Val His Lys Leu Leu
170 65 70 75 80
172 Thr Gly Arg Gly Lys Glu Phe Ala Thr Leu Arg Gln Tyr Lys Gly Leu
173 85 90 95
175 Cys Gly Phe Pro Lys Arg Ser Glu Ser Glu His Asp Val Trp Glu Thr
176 100 105 110
178 Gly His Ser Ser Thr Ser Leu Ser Gly Ala Met Gly Met Ala Ala Ala
179 115 120 125
181 Arg Asp Ile Lys Gly Thr Asp Glu Tyr Ile Ile Pro Ile Ile Gly Asp
182 130 135 140
184 Gly Ala Leu Thr Gly Gly Met Ala Leu Glu Ala Leu Asn His Ile Gly
185 145 150 155 160
187 Asp Glu Lys Lys Asp Met Ile Val Ile Leu Asn Asp Asn Glu Met Ser
188 165 170 175
190 Ile Ala Pro Asn Val Gly Ala Ile His Ser Met Leu Gly Arg Leu Arg
191 180 185 190
193 Thr Ala Gly Lys Tyr Gln Trp Val Lys Asp Glu Leu Glu Tyr Leu Phe
194 195 200 205
196 Lys Lys Ile Pro Ala Val Gly Gly Lys Leu Ala Ala Thr Ala Glu Arg
197 210 215 220
199 Val Lys Asp Ser Leu Lys Tyr Met Leu Val Ser Gly Met Phe Phe Glu
200 225 230 235 240
202 Glu Leu Gly Phe Thr Tyr Leu Gly Pro Val Asp Gly His Ser Tyr His
203 245 250 255
205 Glu Leu Ile Glu Asn Leu Gln Tyr Ala Lys Lys Thr Lys Gly Pro Val
206 260 265 270
208 Leu Leu His Val Ile Thr Lys Lys Gly Lys Gly Tyr Lys Pro Ala Glu
209 275 280 285
211 Thr Asp Thr Ile Gly Thr Trp His Gly Thr Gly Pro Tyr Lys Ile Asn
212 290 295 300
214 Thr Gly Asp Phe Val Lys Pro Lys Ala Ala Ala Pro Ser Trp Ser Gly
215 305 310 315 320
217 Leu Val Ser Gly Thr Val Gln Arg Met Ala Arg Glu Asp Gly Arg Ile
218 325 330 335
220 Val Ala Ile Thr Pro Ala Met Pro Val Gly Ser Lys Leu Glu Gly Phe
221 340 345 350
223 Ala Lys Glu Phe Pro Asp Arg Met Phe Asp Val Gly Ile Ala Glu Gln

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224          355          360          365
226 His Ala Ala Thr Met Ala Ala Met Ala Met Gln Gly Met Lys Pro
227          370          375          380
229 Phe Leu Ala Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr Asp Gln Val
230 385          390          395          400
232 Val His Asp Ile Cys Arg Gln Asn Ala Asn Val Phe Ile Gly Ile Asp
233          405          410          415
235 Arg Ala Gly Leu Val Gly Ala Asp Gly Glu Thr His Gln Gly Val Phe
236          420          425          430
238 Asp Ile Ala Phe Met Arg His Ile Pro Asn Met Val Leu Met Met Pro
239          435          440          445
241 Lys Asp Glu Asn Glu Gly Gln His Met Val His Thr Ala Leu Ser Tyr
242          450          455          460
244 Asp Glu Gly Pro Ile Ala Met Arg Phe Pro Arg Gly Asn Gly Leu Gly
245 465          470          475          480
247 Val Lys Met Asp Glu Gln Leu Lys Thr Ile Pro Ile Gly Thr Trp Glu
248          485          490          495
250 Val Leu Arg Pro Gly Asn Asp Ala Val Ile Leu Thr Phe Gly Thr Thr
251          500          505          510
253 Ile Glu Met Ala Ile Glu Ala Ala Glu Glu Leu Gln Lys Glu Gly Leu
254          515          520          525
256 Ser Val Arg Val Val Asn Ala Arg Phe Ile Lys Pro Ile Asp Glu Lys
257          530          535          540
259 Met Met Lys Ser Ile Leu Lys Glu Gly Leu Pro Ile Leu Thr Ile Glu
260 545          550          555          560
262 Glu Ala Val Leu Glu Gly Gly Phe Gly Ser Ser Ile Leu Glu Phe Ala
263          565          570          575
265 His Asp Gln Gly Glu Tyr His Thr Pro Ile Asp Arg Met Gly Ile Pro
266          580          585          590
268 Asp Arg Phe Ile Glu His Gly Ser Val Thr Ala Leu Leu Glu Glu Ile
269          595          600          605
271 Gly Leu Thr Lys Gln Gln Val Ala Asn Arg Ile Arg Leu Leu Met Pro
272          610          615          620
274 Pro Lys Thr His Lys Gly Ile Gly Ser
275 625          630
278 <210> SEQ ID NO: 3
279 <211> LENGTH: 620
280 <212> TYPE: PRT
281 <213> ORGANISM: Escherichia coli
283 <400> SEQUENCE: 3
285 Met Ser Phe Asp Ile Ala Lys Tyr Pro Thr Leu Ala Leu Val Asp Ser
286 1          5          10          15
288 Thr Gln Glu Leu Arg Leu Leu Pro Lys Glu Ser Leu Pro Lys Leu Cys
289          20          25          30
291 Asp Glu Leu Arg Arg Tyr Leu Leu Asp Ser Val Ser Arg Ser Ser Gly
292          35          40          45
294 His Phe Ala Ser Gly Leu Gly Thr Val Glu Leu Thr Val Ala Leu His
295          50          55          60
297 Tyr Val Tyr Asn Thr Pro Phe Asp Gln Leu Ile Trp Asp Val Gly His

```

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```

298 65          70          75          80
300 Gln Ala Tyr Pro His Lys Ile Leu Thr Gly Arg Arg Asp Lys Ile Gly
301          85          90          95
303 Thr Ile Arg Gln Lys Gly Gly Leu His Pro Phe Pro Trp Arg Gly Glu
304          100          105          110
306 Ser Glu Tyr Asp Val Leu Ser Val Gly His Ser Ser Thr Ser Ile Ser
307          115          120          125
309 Ala Gly Ile Gly Ile Ala Val Ala Ala Glu Lys Glu Gly Lys Asn Arg
310          130          135          140
312 Arg Thr Val Cys Val Ile Gly Asp Gly Ala Ile Thr Ala Gly Met Ala
313 145          150          155          160
315 Phe Glu Ala Met Asn His Ala Gly Asp Ile Arg Pro Asp Met Leu Val
316          165          170          175
318 Ile Leu Asn Asp Asn Glu Met Ser Ile Ser Glu Asn Val Gly Ala Leu
319          180          185          190
321 Asn Asn His Leu Ala Gln Leu Leu Ser Gly Lys Leu Tyr Ser Ser Leu
322          195          200          205
324 Arg Glu Gly Gly Lys Lys Val Phe Ser Gly Val Pro Pro Ile Lys Glu
325          210          215          220
327 Leu Leu Lys Arg Thr Glu Glu His Ile Lys Gly Met Val Val Pro Gly
328 225          230          235          240
330 Thr Leu Phe Glu Glu Leu Gly Phe Asn Tyr Ile Gly Pro Val Asp Gly
331          245          250          255
333 His Asp Val Leu Gly Leu Ile Thr Thr Leu Lys Asn Met Arg Asp Leu
334          260          265          270
336 Lys Gly Pro Gln Phe Leu His Ile Met Thr Lys Lys Gly Arg Gly Tyr
337          275          280          285
339 Glu Pro Ala Glu Lys Asp Pro Ile Thr Phe His Ala Val Pro Lys Phe
340          290          295          300
342 Asp Pro Ser Ser Gly Cys Leu Pro Lys Ser Ser Gly Gly Leu Pro Ser
343 305          310          315          320
345 Tyr Ser Lys Ile Phe Gly Asp Trp Leu Cys Glu Thr Ala Ala Lys Asp
346          325          330          335
348 Asn Lys Leu Met Ala Ile Thr Pro Ala Met Arg Glu Gly Ser Gly Met
349          340          345          350
351 Val Glu Phe Ser Arg Lys Phe Pro Asp Arg Tyr Phe Asp Val Ala Ile
352          355          360          365
354 Ala Glu Gln His Ala Val Thr Phe Ala Ala Gly Leu Ala Ile Gly Gly
355          370          375          380
357 Tyr Lys Pro Ile Val Ala Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr
358 385          390          395          400
360 Asp Gln Val Leu His Asp Val Ala Ile Gln Lys Leu Pro Val Leu Phe
361          405          410          415
363 Ala Ile Asp Arg Ala Gly Ile Val Gly Ala Asp Gly Gln Thr His Gln
364          420          425          430
366 Gly Ala Phe Asp Leu Ser Tyr Leu Arg Cys Ile Pro Glu Met Val Ile
367          435          440          445
369 Met Thr Pro Ser Asp Glu Asn Glu Cys Arg Gln Met Leu Tyr Thr Gly
370          450          455          460

```

Use of n and / or Xaa has been detected in the Sequence Listing. Review the Sequence Listing to ensure a corresponding explanation is present in the <220> to <223> fields of each sequence using n or Xaa.

VERIFICATION SUMMARY

DATE: 10/05/2001

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TIME: 11:05:13

Input Set : A:\PTO_mh.txt

Output Set: N:\CRF3\10052001\I890229.raw

L:12 M:270 C: Current Application Number differs, Replaced Current Application Number

L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:531 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5

L:1070 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6

L:1072 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6